Title:
Tomato Commodity Survey 2016

Project Leader(s):
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This work was supported by the NYS Department of Ag & Markets - NYS (AGMRKT) project AGMO1- 0000004848 and AGM01- 0000004850.

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Abstract:
A CAPS (Cooperative Agricultural Pest Survey) of tomatoes was conducted for one exotic insect pest, tomato leafminer, and three exotic tomato diseases: bacterial spot, bacterial wilt, and an unknown virus. Suspect samples were sent to either Cornell's Insect Diagnostic Lab or Cornell's Plant Disease Diagnostic Clinic. One sample submitted from a Monroe county farm tested positive for the unknown virus (Spinach latent virus (SpLV)).

Background and justification:
Fresh market tomatoes in New York were valued at $31.4 million in 2015 making NY the 6th largest tomato producing state based on production value (2015 USDA Annual Vegetable Summary). With such a highly valuable crop, early detection of exotic pests is critical to the crops protection and potential pest eradication.

A survey targeting three diseases and one insect pest was conducted throughout New York. Two of the diseases are bacterial, bacterial spot, *Xanthomonas gardneri* , which is found in Ohio, Pennsylvania and Michigan but not in New York and bacterial Wilt, *Ralstonia solanacearum,* which is found worldwide except for USA and Canada. The third is a viral disease, whose causative agent is a previously unknown virus found in both Pennsylvania and Virginia in 2012. The insect pest, tomato leafminer (TLM)– *Tuta absoluta,* has not been found in the US. TLM is native to South America and was first detected in Spain in 2006. It has continued to spread throughout southern Europe and northen Africa. It is considered a serious pest in both its native range as well as introduced areas.

Objectives:

1. Survey, using APHIS approved protocols, traps and lures, for tomato leaf miner (*Tuta absoluta*) in tomato fields. Submit any suspect samples to Cornell University Insect Diagnostic Lab.
2. Monitor and scout tomato fields bi-weekly for symptoms of the 3 target diseases. Submit any suspect samples for determination to Cornell's Plant Disease Diagnostic Clinic

Procedures:
We followed the CAPS approved survey method to survey and monitor for *Tuta absoluta* (TLM). Protocols for the three exotic diseases created in 2013 were used to monitor for bacterial spot (BS), bacterial wilt (BW) and the unknown virus (UKV).

Surveys were conducted on 51 farms in 28 counties throughout NY (Figure 1). Traps for TLM were initiated late May to late June throughout western, central and eastern NY and checked every two weeks. Approximately one trap was set per acre of tomatoes or per high tunnel for a total of 167 traps. Lures were replaced every four weeks according to protocol. Any suspect insect samples were collect and sent to Jason Dombroskie of Cornell's Insect Diagnostic Lab. A disease survey was also conducted every two weeks on 112 acres of field tomatoes and 39 high tunnels. Suspect samples were collected, placed into labeled Ziploc bags and stored in a cooler. Disease samples were sent to Cornell's Plant Disease Diagnostic Clinic. Surveying and trapping continued until late August or mid September depending on site (Table 1).

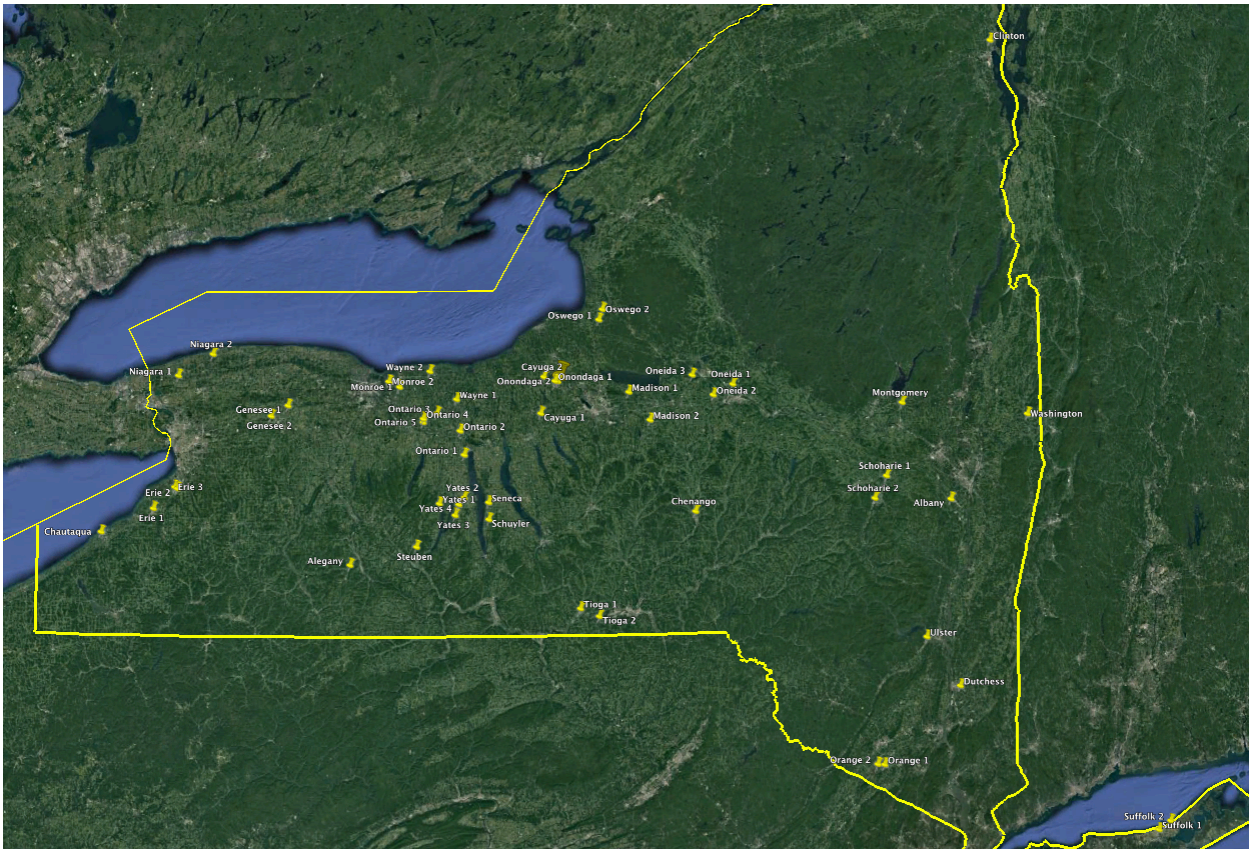

Figure 1. Map of NY showing the placement of the 51 survey sites.

Table 1. County locations for the 51 sites, including total tomato acreage surveyed, number of high tunnels, total TLM traps deployed, start and end dates, total services for the season, and results for TLM (tomato leafminer), BW (bacterial wilt), BS (bacterial spot), and UKV (unknown virus).

County	Acres	High Tunnels	# Traps	Start Date	End Date	# Services	TLM	BW	BS	UKV
Albany	1		1	7/5/16	9/12/16	5	0	0	0	0
Allegany	<1	1	2	6/2/16	8/25/16	6	0	0	0	0
Cayuga 1	<1	4	5	6/7/16	8/23/16	6	0	0	0	0
Cayuga 2	<1	1	2	6/7/16	8/23/16	6	0	0	0	0
Chautauqua	4		4	6/16/16	9/8/16	6	0	0	0	0
Chenango		12	12	6/9/16	8/25/16	6	0	0	0	0
Clinton	2		2	7/27/16	9/5/16	5	0	0	0	0
Dutchess	2		1	7/1/16	9/2/16	5	0	0	0	0
Erie 1	5		5	6/16/16	9/15/16	6	0	0	0	0
Erie 2	3		3	6/22/16	9/15/16	6	0	0	0	0
Erie 3	5		5	6/22/16	9/15/16	6	0	0	0	0
Genesee 1	2		2	6/17/16	9/8/16	6	0	0	0	0
Genesee 2	3		3	6/17/16	9/6/16	6	0	0	0	0
Madison 1	<1	1	2	6/9/16	8/25/16	6	0	0	0	0
Madison 2		3	3	6/8/16	8/24/16	6	0	0	0	0
Monroe 1	1		1	6/10/16	8/31/16	6	0	0	0	1
Monroe 2	6		6	6/10/16	8/31/16	6	0	0	0	0
Montgomery	1		1	7/5/16	8/2/16	5	0	0	0	0
Niagara 1	2		2	6/14/16	9/7/16	6	0	0	0	0
Niagara 2	3		3	6/14/16	9/8/16	6	0	0	0	0
Oneida 1	2		2	6/8/16	8/24/16	6	0	0	0	0
Oneida 2	4		4	6/8/16	8/24/16	6	0	0	0	0
Oneida 3	5		5	6/8/16	8/24/16	6	0	0	0	0
Onondaga 1	18		22	6/1/16	8/23/16	6	0	0	0	0
Onondaga 2	13		14	6/1/16	8/23/16	6	0	0	0	0
Ontario 1	1		1	5/31/16	8/26/16	6	0	0	0	0
Ontario 2	<1		1	6/3/16	8/22/16	6	0	0	0	0
Ontario 3	<1	1	2	6/3/16	8/22/16	6	0	0	0	0
Ontario 4	<1	1	2	6/10/16	8/31/16	6	0	0	0	0
Ontario 5	<1		1	6/10/16	8/31/16	6	0	0	0	0

Orange 1	3		3	6/28/16	8/2/16	5	0	0	0	0
Orange 2	10		2	6/28/16	8/2/16	5	0	0	0	0
Oswego 1	<1	2	3	6/7/16	8/23/16	6	0	0	0	0
Oswego 2	<1	1	2	6/7/16	8/23/16	6	0	0	0	0
Schoharie 1	2		2	7/5/16	9/14/16	5	0	0	0	0
Schoharie 2	2		2	7/5/16	9/14/16	5	0	0	0	0
Schuyler		3	3	6/6/16	8/24/16	6	0	0	0	0
Seneca	<1	1	2	6/6/16	8/24/16	6	0	0	0	0
Steuben	<1	1	2	6/2/16	8/25/16	6	0	0	0	0
Suffolk 1	2		2	7/15/16	9/16/16	7	0	0	0	0
Suffolk 2	2		2	7/15/16	9/16/16	7	0	0	0	0
Tioga 1	<1		1	6/6/16	8/24/16	6	0	0	0	0
Tioga 2	<1	1	2	6/6/16	8/24/16	6	0	0	0	0
Ulster	1		1	6/1/31	9/1/16	5	0	0	0	0
Washington	3		4	7/6/16	9/14/16	5	0	0	0	0
Wayne 1	2		2	6/3/16	8/22/16	6	0	0	0	0
Wayne 1	<1	2	3	6/3/16	8/22/16	6	0	0	0	0
Yates 1	<1	1	2	5/31/16	8/26/16	6	0	0	0	0
Yates 2	2	1	3	5/31/16	8/26/16	6	0	0	0	0
Yates 3	<1	1	2	6/2/16	8/25/16	6	0	0	0	0
Yates 4	<1	1	3	5/31/16	8/26/16	6	0	0	0	0

Results and discussion:

A total of 51 farms were surveyed in 28 counties. Surveys were conducted every two weeks beginning in June and ending in mid-September. A total of 5-7 surveys were conducted on the 112 acres plus 39 high tunnels throughout the summer. In addition, the 167 traps were checked between 5-7 times throughout the summer. Of all the samples collected, only one sample, collected from a farm in Monroe county, tested positive. The test came back positive for the unknown virus, now identified as Spinach latent virus (SpLV). This disease is thought to be seed transmitted, unfortunately the grower did not keep any of the seed bags so the lot # could not be determined.

During the survey, other diseases were detected, including early blight, white mold, septoria leaf spot, bacterial speck, and bacterial canker, growers were immediately informed and advised on treatment options.

Project location(s):

Surveys were conducted on tomato farms in Albany, Allegany, Cayuga, Chautauqua, Chenango, Clinton, Dutchess, Erie, Genesee, Madison, Monroe, Montgomery, Niagara, Oneida, Onondaga, Ontario, Orange, Oswego, Schoharie, Schuyler, Seneca, Steuben, Suffolk, Tioga, Ulster, Washington, Wayne and Yates counties.

Samples of resources developed:
Photograph of Spinach latent virus (SpLV)).